IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-17. (Withdrawn)

18. (Currently Amended) A differential GMR sensor, comprising:

a first self-pinned GMR sensor having a first pinned layer, a first spacer layer and a first free layer;

~~a bias structure over the first free layer, wherein the bias structure is formed to provide antiparallel magnetizations for the first and second free layers without using an antiferromagnetic layer; and~~

a second self-pinned GMR sensor having a second pinned layer, a second spacer layer and a second free layer; and

a bias structure disposed between the first free layer of the first self-pinned GMR sensor and the second free layer of the second self-pinned GMR sensor, wherein the bias structure is configured to provide antiparallel magnetizations for the first and second free layers without using an antiferromagnetic layer.

19. (Currently Amended) The sensor of claim 18, wherein the bias structure further comprises four ferromagnetic layers separated with three interlayers selected to provide a desired gap length.

20. (Original) The sensor of claim 18, wherein the bias structure further comprises four ferromagnetic layers separated with three interlayers.

21. (Currently Amended) The sensor of claim 20, wherein the four ferromagnetic layers further [[comprises]] comprise four NiFe layers.

22. (Currently Amended) The sensor of claim 21, wherein the four NiFe [[comprises]] comprise a nickel composition of 90%.

23. (Currently Amended) The sensor of claim 20, wherein the three interlayers further [[comprises]] comprise ruthenium.

24-33. (Withdrawn)

34. (Currently Amended) A magnetic disk recording system, comprising:

a magnetic storage medium having a plurality of tracks for recording of data; and

a magnetic transducer maintained in a closely spaced position relative to the magnetic storage medium during relative motion between the magnetic transducer and the magnetic storage medium, the magnetic transducer including a magnetoresistive read sensor, the magnetoresistive read sensor further comprising:

a first self-pinned GMR sensor having a first pinned layer, a first spacer layer and a first free layer;

~~a bias structure over the first free layer, wherein the bias structure is formed to provide antiparallel magnetizations for the first and second free layers without using an antiferromagnetic layer; and~~

a second self-pinned GMR sensor having a second pinned layer, a second spacer layer and a second free layer; and

a bias structure disposed between the first free layer of the first self-pinned GMR sensor and the second free layer of the second self-pinned GMR sensor, wherein the bias structure is configured to provide antiparallel magnetizations for the first and second free layers without using an antiferromagnetic layer.

35. (Currently Amended) The magnetic disk recording system of claim 34, wherein the bias structure further comprises four ferromagnetic layers separated with three interlayers selected to provide a desired gap length.

36. (Original) The magnetic disk recording system of claim 34, wherein the bias structure further comprises four ferromagnetic layers separated with three interlayers.

37. (Currently Amended) The magnetic disk recording system of claim 36, wherein the four ferromagnetic layers further [[comprises]] comprise four NiFe layers.

38. (Currently Amended) The magnetic disk recording system of claim 37, wherein the four NiFe [[comprises]] comprise a nickel composition of 90%.

39. (Currently Amended) The magnetic disk recording system of claim 36, wherein the three interlayers further [[comprises]] comprise ruthenium.

40-49. (Withdrawn)

50. (Currently Amended) A differential GMR sensor, comprising:

first self-pinned means having a first pinned layer, a first spacer layer and a first free layer;

a second self-pinned ~~GMR sensor~~ means having a second pinned layer, a second spacer layer and a second free layer; and

means, disposed between the first free layer of the first self-pinned means and the second free layer of the second self-pinned means, for biasing the first and second ~~pinned~~ free layers of the first and second self-pinned means to provide antiparallel magnetizations for the first and second free layers without using an antiferromagnetic layer.